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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/805,309

03/22/2004

Junichiro Kobayashi

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7590

06/15/2005

RADER FISHMAN & GRAUER PLLC  
LION BUILDING  
1233 20TH STREET N.W., SUITE 501  
WASHINGTON, DC 20036

EXAMINER

LE, THAO X

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/805,309	Applicant(s) KOBAYASHI, JUNICHIRO	
	Examiner Thao X. Le	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 8-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/24/05 05/24/05</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-7, drawn to a semiconductor device, classified in class 257, subclass 197.
- II. Claims 8-12, drawn to a method of making a semiconductor device, classified in class 438, subclass 235, 309, and 312.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group I and Group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make other and materially different product. 'A covering layer having a top surface higher than the height of the top surface of the base layer' is not required in the device claim.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with the Applicant's Attorney, Mr. Ronald Kananen, on 07 June 2005 a provisional election was made WITH traverse and

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rejoinder option of the method claims to prosecute the invention of Group I, claims 1-7.

Affirmation of this election must be made by applicant in replying to this Office action.

Claims 8-12 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Specification***

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Drawings***

6. Figure 1A-2D should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 7 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6495869 to Blayac et al.

Regarding claim 1, Blayac discloses a semiconductor device in fig. 4-5 comprising: a semiconductor mesa portion (where emitter E is located) formed on a substrate S, column 1 line 23, including a stack of at least a collector layer C, a base layer B, and an emitter layer E, column 1 line 25, formed in narrower region compared with said base layer B, fig. 5, and functioning as an active region of a bipolar transistor; a base contact pad mesa portion (where 110 is on column B/C/SC) formed on said substrate S apart from said semiconductor mesa portion (where E is located) and formed with a height the same as the height of the top surface of said base layer B, fig. 5; and a conductive layer 110, column 5 line 28, formed integrally with a base electrode (left portion in contact with base B) formed connected to said base layer B at part of a region of formation of said base layer B other than the region of formation of said emitter layer E, fig. 5, a base contact pad electrode (right portion of 110 in contact with column B/C/SC) formed above said base contact pad mesa portion in a region other than near the edges of the top surface of said base contact pad mesa portion, fig. 4, and an interconnect (middle portion of 110) for connecting said base electrode and said base contact pad electrode.

Regarding claim 2, Blayac discloses a semiconductor device as set forth in claim 1, wherein the surface layer of said base contact pad mesa portion is formed by the same layer as said base layer B, fig. 5.

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Regarding claim 3, Blayac discloses a semiconductor device as set forth in claim 1, wherein the area under said conductive layer 110 between said semiconductor mesa portion and said base contact pad mesa portion forms a space 100, column 5 line 28.

Regarding claim 7, Blayac discloses the semiconductor device as set forth in claim 1, wherein said semiconductor mesa portion is comprised of a stack of a compound semiconductor and has a heterojunction bipolar transistor, column 5 line 5.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-5 rejected under 35 U.S.C. 102(e) as being anticipated by US 6870184 to Li et al.

Regarding claim 1, Li discloses a semiconductor device in fig. 3a-b comprising: a semiconductor mesa portion (middle portion) formed on a substrate 104, column 2 line 49, including a stack of at least a collector layer 108, a base layer 110, and an emitter layer 112, column 2 line 50-51, formed in narrower region compared with said base layer 108, fig. 3b, and functioning as an active region of a bipolar transistor; a base contact pad mesa portion 102, fig. 3b, formed on said substrate 104 apart from said semiconductor mesa portion (middle portion) and formed with a height the same as the

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height of the top surface of said base layer 110, fig. 3b; and a conductive layer 118, column 2 line 58, formed integrally with a base electrode (left portion of 118) formed connected to said base layer 110 at part of a region of formation of said base layer 110 other than the region of formation of said emitter layer 112, fig. 3b, a base contact pad electrode (right portion of 118) formed above said base contact pad mesa portion 102 in a region other than near the edges of the top surface of said base contact pad mesa portion 102, fig. 3a, and an interconnect (middle portion of 118) for connecting said base electrode and said base contact pad electrode.

Regarding claim 2, Li discloses a semiconductor device as set forth in claim 1, wherein the surface layer of said base contact pad mesa portion 102 is formed by the same layer as said base layer 110, column 3 line 28-33.

Regarding claim 3, Li discloses a semiconductor device as set forth in claim 1, wherein the area under said conductive layer 118 between said semiconductor mesa portion and said base contact pad mesa portion forms a space, fig. 3b column 2 lines 56-58.

Regarding claim 4, Li discloses a semiconductor device as set forth in claim 1, wherein an insulating film 224, column 4 line 55, is formed below said conductive layer between said semiconductor mesa portion and said base contact pad mesa portion, fig. 11.

Regarding claim 5, Li discloses the semiconductor device as set forth in claim 1, wherein said base electrode is formed in a region other than the region of formation of said emitter layer 112 and other than near the edges of said base layer 110, fig. 3a.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6495869 to Blayac et al.

Regarding claim 6, Blayac does not disclose the semiconductor device as set forth in claim 1, wherein a distance between said semiconductor mesa portion and said base contact pad mesa portion is 1 to 5 micron.

However, Blayac discloses a general distance or a gap 100 between said semiconductor mesa portion and said base contact pad mesa portion, fig. 1.

Accordingly, it would have been obvious to one of ordinary skill in art to use general gap teaching of Blayac in the range as claimed, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

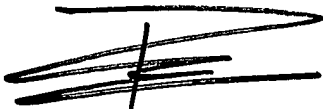
***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, consisting of several horizontal strokes and a vertical line intersecting them, forming a stylized 'Z' or 'L' shape.

Thao X. Le  
Patent Examiner  
08 June 2005